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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/057,185	01/25/2002	Eric Adler	BUR919990222US2	8374

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EXAMINER

TUGBANG, ANTHONY D

ART UNIT	PAPER NUMBER
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3729

DATE MAILED: 08/27/2003

7

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/057,185

Applicant(s)

ADLER, ERIC

Examiner

A. Dexter Tugbang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 16 June 2003.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 9-22 is/are pending in the application.
- 4a) Of the above claim(s) 21 and 22 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 9-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Response to Amendment***

1. The amendment filed 6/16/03 (Paper No. 6) has been fully considered and made of record.

### ***Election/Restrictions***

2. Newly submitted Claims 21 and 22 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons. The features of forming an etch stop layer overlaying the semiconductor substrate and forming a conductive via through the insulating cap, are all features that: 1) were not originally presented, and 2) are directed to a different and distinct subcombination relative to the subcombination (i.e. Claims 10-20) originally claimed.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, Claims 21 and 22 have been withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

### ***Specification***

3. The abstract of the disclosure is objected to because the abstract is not directed to the claimed invention, i.e. method. Correction is required. See MPEP § 608.01(b).
4. Applicant is reminded of the proper content of an abstract of the disclosure.

A patent abstract is a concise statement of the technical disclosure of the patent and should include that which is new in the art to which the invention pertains. If the patent is of a

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basic nature, the entire technical disclosure may be new in the art, and the abstract should be directed to the entire disclosure. If the patent is in the nature of an improvement in an old apparatus, process, product, or composition, the abstract should include the technical disclosure of the improvement. In certain patents, particularly those for compounds and compositions, wherein the process for making and/or the use thereof are not obvious, the abstract should set forth a process for making and/or use thereof. If the new technical disclosure involves modifications or alternatives, the abstract should mention by way of example the preferred modification or alternative.

The abstract should not refer to purported merits or speculative applications of the invention and should not compare the invention with the prior art.

Where applicable, the abstract should include the following:

- (1) if a machine or apparatus, its organization and operation;
- (2) if an article, its method of making;
- (3) if a chemical compound, its identity and use;
- (4) if a mixture, its ingredients;
- (5) if a process, the steps.**

Extensive mechanical and design details of apparatus should not be given.

5. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: A Method of Fabricating a Capacitor Having a Sidewall Spacer.

### ***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 9, 14-17 and 18-19 are rejected under 35 U.S.C. 102(b) as being anticipated by Lee et al 5,742,472.

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Lee discloses a method of fabricating a capacitor structure (noting Figures 4-6) comprising: forming a metallic bottom plate (electrode 20) over a semiconductor substrate (see col. 3, lines 30-34); forming a dielectric layer 30 overlaying the bottom plate; forming over the dielectric layer a top plate (electrode 40) having a smaller area than the bottom plate with the top plate having an outer perimeter; and forming insulating sidewall spacers 70 against the outer perimeter of the top plate and against or overlaying a portion, i.e. outer perimeter, of the dielectric layer 30, which meets all of the limitations of the claimed method.

Regarding Claim 15, Lee suggests that the dielectric layer can be made of conventional materials of silicon dioxide (see col. 1, lines 41-43).

Regarding Claims 16 and 17, Lee further teaches forming an insulating cap (dielectric layer 80) with an inner perimeter coextensive with the top plate 40. An outer perimeter of the sidewall spacers 70 is against the inner perimeter of the insulating cap (see Fig. 5).

Regarding Claims 18 and 19, the dielectric layer 80 of Lee can alternatively be read as forming another "at least one insulating sidewall spacer" on a top surface of the dielectric layer 30 and which overlays a portion of the bottom plate 20 (in Fig. 5).

### ***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al in view of Bailey et al 4,172,758.

Lee discloses the claimed fabrication method as relied upon above, and further including patterning of the top plate 40 to expose the dielectric at the perimeter of the top plate before forming the two insulating sidewall spacers (see col. 4, lines 12-14). Lee does not teach that the top plate is formed specifically by etching.

Bailey teaches an etching process of forming a top plate 24 (in Fig. 2) by etching with a mask to pattern the top plate with a dielectric layer 23 (see col. 4, lines 13-31). The benefits of the above etching process allow a high degree of dimensional control of the top plate (see col. 2, lines 9-12).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have patterned the top plate of Lee with the etching process of Bailey, to positively allow a high degree of dimensional control.

10. Claims 11-13 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al in view of Motsiff et al 5,795,819.

Lee discloses the claimed manufacturing method as previously discussed. Lee does not mention forming a conductor embedded in the semiconductor substrate underlying the bottom plate or such that the bottom plate overlays and is in electrical contact with the conductor.

Motsiff teaches a semiconductor fabrication process of forming a bottom plate 7 (in Fig. 1C) overlaying and in direct electrical contact with a copper damascene conductor or structure 4 embedded within a semiconductor substrate 1 (see col. 2, lines 24+). The bottom plate 7 acts as a conductive barrier layer with other conductors 12 and is in contact with the conductor 4. The

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benefits of the above semiconductor fabrication process allows a highly reliable semiconductor component to be formed (see col. 1, lines 54-57).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the method of Lee by forming an embedded conductor with the semiconductor process of Motsiff, to positively form a highly reliable semiconductive capacitor.

*Response to Arguments*

11. Applicant's arguments with respect to claims 9-20 have been considered but are moot in view of the new ground(s) of rejection.

*Conclusion*

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

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however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to A. Dexter Tugbang whose telephone number is 703-308-7599.

The examiner can normally be reached on Monday - Friday 7:00 am - 3:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter Vo can be reached on 703-308-1789. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0858.



**A. Dexter Tugbang**  
**Primary Examiner**  
**Art Unit 3729**

August 22, 2003